

Title: bueno: Benchmarking, Performance, and Provenance

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This presentation explores an alternative approach to the application benchmarking process. Application benchmarking is an important part of the lifecycle of any production program, but many contemporary approaches are complicated by a diversity of ever-changing software stacks. Furthermore, the challenges of measuring application performance are exacerbated as programs change during their development. As we will discuss, application benchmarking can potentially benefit from integration with lightweight containers, a form of packaged programs typically managed by container runtimes. Our goal is to provide reproducible, automated benchmarking environments across different systems to alleviate an otherwise tedious, fallible, and challenging task. Thus, we present bueno: a software framework providing tools that can improve the user's ability to perform application benchmarking and corresponding analysis. The ultimate goal of which is to provide an extensible, straightforward toolset to aid in automated testing with environmental provenance, as conducting reproducible application analyses without repeatability is problematic. Replicating the application environment, ideally mirroring the native configuration, is essential for meaningful comparative analysis. Application provenance and environment repeatability become especially important when benchmarking across multiple platforms or distributions. We continue to take great care while developing bueno, namely studying the vital aspects of reproducible benchmarking and prioritizing support for a broad array of scientific applications.